

## ABSTRACT

A method and system for measuring time variations of a response of a blood  
5 perfused fleshy medium to an external electromagnetic field is provided. The  
response of the medium to the external electromagnetic field can be a photo-  
acoustic signal, obtained in response to the exciting light, and/or impedance of the  
medium, in response to the applied *ac* electromagnetic field. Measurements of the  
time variations of the response of the medium are carried out when the condition of  
10 artificial kinetics is created and maintained over a certain time period by applying  
primary over-systolic pressure to a certain location at the medium with normal  
blood flow, so as to achieve a state of temporary blood flow cessation at the  
medium downstream of the certain location. When required, the control of the  
condition of the artificial kinetics can be further achieved by applying a  
15 perturbation of secondary pressure to the fleshy medium.